HOUSE OF COMMONS
CHAMBRE DES COMMUNES
CANADA

# Standing Committee on Agriculture and Agri-Food

AGRI • NUMBER 098 • 1st SESSION • 42nd PARLIAMENT

EVIDENCE

## Monday, April 30, 2018

---

**Chair**

**Mr. Pat Finnigan**

# Standing Committee on Agriculture and Agri-Food

**Monday, April 30, 2018**

● (1530)

[*Translation*]

**The Chair (Mr. Pat Finnigan (Miramichi—Grand Lake, Lib.)):** I want to welcome everyone to this meeting of the Standing Committee on Agriculture and Agri-Food.

Pursuant to Standing Order 108(2), we are beginning the study on the advancements of technology and research in the agriculture industry that can support Canadian exports.

[*English*]

Today, from the Canada Grains Council, we have Ms. Krista Thomas. Welcome to our committee.

[*Translation*]

Krista Thomas is the director of plant innovation.

From CropLife Canada, we are hearing from Pierre Petelle, its president and chief executive officer.

Welcome to this meeting, Mr. Petelle.

We also have two substitutes on the committee, including Raj Saini.

[*English*]

We also have Mr. Larry Bagnell replacing Mr. Francis Drouin.

We'll start with our seven-minute opening statement.

[*Translation*]

Mr. Petelle, you can begin if you like.

[*English*]

**Mr. Pierre Petelle (President and Chief Executive Officer, CropLife Canada):** Thank you, Mr. Chair, and thank you to members of the committee.

On behalf of CropLife Canada and its member companies, we appreciate the invitation to be here today.

CropLife Canada is the trade association that represents the manufacturers, developers, and distributors of plant science innovations. These are the pest control product tools, and the products of modern plant breeding that are used in agriculture, urban, and other public settings.

Our mission is to enable the plant science industry to bring the benefits of its technologies to farmers and the public. Those benefits manifest themselves in many different forms, including driving agricultural exports, creating high-skills jobs, strengthening the Canadian economy, increasing tax revenues for governments, improving environmental sustainability, and increasing access to safe and affordable food for Canadians.

We're pleased to see the committee undertake this study as agriculture is often left behind when discussion of technology and research takes place. The truth is that agriculture and agrifood are sectors that have been revolutionized by technological change.

If we take a look at history, Canadian farmers have always been among the early adopters of technology. This has helped make them leaders in producing safe, affordable, and sustainable food for Canadian consumers and the world.

Technologies like pest control products and biotech crops have played an important role in sustainability, increasing agricultural production in Canada while maintaining the high safety standards we have established in this country. These advancements have resulted in economic gains, environmental protection, and cost savings for consumers. For example, plant science technology alone contributes $9.8 billion to Canada's GDP every year. These technologies have also allowed farmers to be more productive on existing farmland. In fact, without pesticides and biotech crops, Canadian farmers would need to cultivate 50% more land than we do today. This would be devastating for Canada's biodiversity.

Consumers also benefit from these technologies. Without plant science technologies, Canadians would pay about 55% more for food on average. That's roughly $4,400 a year per family. Canadians currently enjoy better access to a nutritious and affordable food supply than at any other time in our history, thanks to modern agriculture.

This renewed focus on agriculture and technology is timely in light of the Advisory Council on Economic Growth's report to the government and the work under way by the Economic Strategy Table on Agri-Food.

While we still await final reports from the economic strategy tables, the work of the Barton report is done, and its recommendations are clear.

The Barton report highlights the agrifood sector as an important area of potential growth for the Canadian economy, and says that innovation is the key to unleashing agriculture's potential. No surprise there. Canada is, however, not the only country pursuing innovations in agriculture. As others pursue advancements in data analytics, automation, and genomics, Canada must act quickly or risk being left behind.

The Barton report identifies several barriers to success for Canada's agrifood sector, one of which is increasing productivity. Agriculture must continue to adopt new technologies and innovation, such as pest control products and products of modern plant breeding to increase productivity.

One of the other key barriers to success identified in the report is expanding trade. Canada needs preferential trade agreements in high potential markets, with China being at the top of that list. Without access to these markets, Canada cannot successfully leverage its major competitive advantages, namely its large agricultural land base, access to natural resources, and innovative farmers.

However, access to markets cannot be limited to just removing tariffs. We need ongoing and enhanced engagement on non-tariff barriers that countries readily utilize. One only needs to look at the issue of durum wheat into Italy to recognize a tariff removal is not always enough to secure ensured access to markets.

Canada is respected around the world for its strong science-based regulatory system when it comes to agriculture and food. This commitment to science-based regulation must continue, and we must seize opportunities to improve the efficiencies and streamline regulatory approaches where possible to drive greater innovation and competitiveness.

We believe there are many opportunities when it comes to products of modern plant breeding and pesticides to modernize and streamline these approaches, to drive greater innovation while still protecting human health and the environment.

We would very much like to discuss that with the committee today. Canada's regulators cannot be divorced from the broader Government of Canada objectives to innovate our way to $75 billion in agrifood exports. They need the help of elected officials like you to help deflect the inevitable criticism from our detractors at the slightest mention of economic considerations.

We believe that government policy on building agriculture exports and promoting innovation should help build on our accomplishments to date, and recognize how far we've come. Technological advancements, such as those in crop protection and plant biotech, have helped create an agriculture production system that is more sustainable than it has ever been before.

● (1535)

Canadian farmers' adoption of technology has also driven greater food production than ever before, which has spurred economic growth throughout the country. It has also helped ensure that Canadians pay some of the lowest food prices and have access to one of the safest food supplies in the world.

Canada can, and should, be a leader when it comes to feeding a growing world population and competing in markets around the globe. We need the right policies at home, however, to make that happen.

I thank you for your time and look forward to any questions that the committee might have.

**The Chair:** Thank you, Mr. Petelle.

Now, Ms. Thomas, you have up to seven minutes.

**Ms. Krista Thomas (Director of Plant Innovation, Canada Grains Council):** Thank you, Mr. Chair. It's a pleasure to have an opportunity to appear before you this afternoon.

My name is Krista Thomas. I'm the director of plant innovation with the Canada Grains Council. The Canada Grains Council is Canada's national umbrella organization for the grains sector, with over 30 members representing seed and life science companies and associations, grower groups, commodity organizations, and grain companies. Accordingly, we work on issues that are important to the entire value chain and that impact the grains, cereals, oilseeds, and pulses grown in Canada.

One of the Grains Council's most important areas of focus today is seed innovation. You might ask exactly what is meant by seed innovation. Does that refer to biotechnology, or GMOs? Yes, it absolutely does, but I'm also referring to the very latest, cutting-edge tools to be added to the plant breeders' tool box, those based on gene editing systems such as CRISPR-Cas9.

The CGC has two main objectives for seed innovation. The first is to create a domestic environment that drives innovation in the crop sector, which means having pre-market regulatory programs that are predictable and clear and that do not inadvertently prevent or delay innovators from acting on new opportunities. Second, with up to 90% of our commodities destined for international markets, Canada needs to think and work collectively with other countries on regulation, because failing to do so will leave a patchwork of divergent regulatory approaches leading to trade disruptions and an unpredictable environment for innovators, growers, and exporters.

This is a very timely discussion to be having today. Canada has set a very ambitious target of reaching $75 billion in agrifood exports annually by 2025. Grains contribute over $22 billion of these exports today. That's more than any other agrifood sector. Accordingly, we want to do our fair share or more to help us reach that target. This means activities such as working closely with the Government of Canada to address non-tariff trade barriers such as maximum residue limits for crop protection products, as Pierre mentioned, but our members also believe that seed innovation will play a driving role.

In particular, gene editing can speed up the development of new crop varieties. For some crops, this means a variety development in two years instead of 10. In addition, many products of gene editing might not fall under the same complex global regulatory and trading environment that we have today for products of biotechnology or GMOs. This opens up more opportunities for innovation in small or orphan crops and a wider range of small or medium-sized companies.

The types of benefits possible through seed innovation include agronomic traits that are certainly beneficial to the grains sector. Traits such as higher yield or better weed control, greater disease resistance, or stress tolerance allow growers to produce more every year while using the same or smaller amounts of land and inputs. However, seed innovation is also delivering more consumer-focused traits to help meet the demand for healthier food, such as higher fibre flour or oil with healthier fat profiles. These, too, offer opportunities for grain growers and for value-added products.

Lastly, we are also seeing innovation in areas that will help farms be more environmentally sustainable, adapt to climate change, or help to reduce food waste.

With all these benefits available, with Canada's strengths in agricultural research, and with our leadership role and success in biotechnology, Canada should also be among the global leaders in gene editing systems for crop development, but today we are worried that Canada is at risk of falling behind our key trading partners and that Canada might lose its share of investment in new crop innovation.

We're very encouraged by the efforts of the economic strategy tables and superclusters to encourage innovation in Canada and by the acknowledgement in budget 2018 of the role that regulatory programs play, either in supporting or hindering innovation. However, our members have identified a pressing need to update and provide greater clarity and predictability around Canada's pre-market programs for regulating products of seed innovation. This, in turn, will better support Canada to engage our trading partners, and align internationally—where possible—in support of a predictable global trading environment.

● (1540)

Thank you for the invitation to be here today. I look forward to your questions.

**The Chair:** Thank you, Ms. Thomas.

Since you didn't use your seven minutes, could you define what the difference is between gene editing and GMO, and is that controversial? Please elaborate on what that new technology is about.

**Ms. Krista Thomas:** Yes, absolutely.

To give a very simple example, if we were to think of a plant genome as being like a book or a novel, techniques of biotechnology —or techniques used to produce GMOs—are like inserting a brand new sentence into that book. Typically, it means inserting a gene from a non-sexually compatible species into a plant.

New techniques, like gene editing, have been in development just in the past five or six years. To go back to the book analogy, they would allow a change to a letter within that book, or perhaps changing a word within a sentence. They're very precise tools that can make very targeted changes to an existing plant gene.

**The Chair:** Let's start with the questioning, for up to six minutes.

[*Translation*]

Mr. Berthold, you can go ahead.

**Mr. Luc Berthold (Mégantic—L'Érable, CPC):** Thank you very much, Mr. Chair.

Mr. Petelle and Ms. Thomas, thank you for being here. We are conducting a study that is really important for the future of Canada's agricultural exports.

In your opinion, what country is currently the most innovative in agriculture? Why is it not Canada?

[*English*]

**Mr. Pierre Petelle:** I can start, and then Krista can add.

Canada is not the biggest market, obviously. When we look at crop protection, for example, we're about 3% to 4% of the global market. Even though Canada exports a lot—we're a big agricultural producer relative to other parts of the world—we're not that big, so we need to make sure that we're at the very forefront in speed to market, and in our regulatory process. All those things need to be at least as good as the bigger markets.

To answer your question directly, the U.S. would probably fit that bill. At least on the plant breeding side, they have made very clear statements about the technology that Krista was referring to. They've said very publicly that these will be treated differently from biotech crops. The regulatory process won't be the same, it won't be as heavy, and it won't be as burdensome. Our interpretation of that is, therefore, they'll be faster to market and have much more predictability in getting those approved. That's where we talk about being left behind.

If that's the case in the U.S., which is a much bigger market, and they start to get approvals of some of these new technologies while we're still wondering how to deal with them here in our system, we will definitely be left behind.

● (1545)

**Ms. Krista Thomas:** I'm going to speak about seed innovation because that's the area I'm most familiar with.

Globally, a number of countries are in a similar position to Canada, asking how these new products should be regulated, and if these products will fall under existing legislation for biotechnology. A number of countries have been able to come forward with clarity for innovators. We see that Australia, the U.S., and a number of countries in Latin America have been able to produce guidance so that innovators in those jurisdictions understand whether the products they're developing will be regulated or not. They have a sense of the types of requirements they'll need to meet, and how long that process will take.

There are no products of gene editing currently commercialized, but we would anticipate that the first products will be in the United States. These are products developed by both small start-up companies and larger multinational companies.

**Mr. Luc Berthold:** Okay, so the red tape and all the regulations—the things we have to improve first—are how we approve new products. I can understand that from both of you. Is that right?

**Mr. Pierre Petelle:** Yes. It's the predictability. From our members' perspective, especially the larger companies, they really need to know what steps are going to be followed and how their innovation is going to be handled in the regulatory process. That will also give them some parameters around timelines, because the timing is really critical. If they know it's going to be 12 months for a review to get approval, they can build their business case around that. If it's going into a black box of uncertainty, that's the worst enemy for innovation. It's just very difficult to convince head offices to—

**Mr. Luc Berthold:** Am I right that those big companies will decide to invest in countries where the regulations are easier than in Canada?

**Mr. Pierre Petelle:** Well, you're going to hear directly from one of our members after us. From our perspective, I think it's not so much that it's easier, it's that it's predictable.

Canada's system is world renowned. I want to make it clear, both on the pesticides and plant biotechnology, that it has served us very well. Canada is viewed very highly all around the world in terms of its decisions.

What we want to make sure, though, is that we continue to adapt. Especially on the plant biotech, we have brand new technology here that doesn't necessarily fit that cookie-cutter approach. We need some flexibility, and we need recognition from the regulators that they have a role to play in innovation. Yes, they're to protect health and environment. Of course, that's their primary mandate. But if we all want to strive to get Canadian agriculture exports to a bold new number, all of those technologies are going through the regulator first. Whether it's that seed, or what needs to be put on the seed to protect it, it all has to go through those regulators. If they are completely divorced from this broader goal of innovation and growing agriculture, they could easily stifle that.

**Ms. Krista Thomas:** If I may add, I agree that the predictability and the clarity is key. I think that's important not only for large investment, but also for small companies and public breeders as well, which are trying to do more with limited budgets.

For instance, in some of our small crops, we may have only one or two plant breeders working in a certain crop in Canada with a limited budget. If you're uncertain whether a product you wish to create will be regulated in Canada, that makes a major difference in terms of your investment decisions at the very early planning stages of R and D.

What we are hearing from colleagues in the plant breeding community is that this is already a concern in Canada, where we do have a unique approach. There are products that are subject to pre-market safety assessments in Canada that are not regulated by any other country in the world.

**The Chair:** That was right on time.

[*Translation*]

Thank you, Mr. Berthold.

[*English*]

Now, Mr. Longfield, for six minutes.

**Mr. Lloyd Longfield (Guelph, Lib.):** Thank you both for being here, and for coming back as well. You've contributed a lot to our studies in the past, and we've had a lot of similar conversations about how we can be competitive in the regulatory environment where we are competing against other partners.

I was looking at testimony from a previous meeting where the CRISPR market was discussed.

I'll direct this first to Ms. Thomas.

You mentioned CRISPR as well, and that this market could be developed quickly, within a year. The Americans are even looking at possibly not going through the same regulatory process for that product, streamlining the process, and then we will have to compete against them.

Would you be able to expand on that at all?

● (1550)

**Ms. Krista Thomas:** At the end of March, the USDA published some guidance that outlined what their regulatory direction for products of gene editing—like products derived using the CRISPR system—would be. That statement spoke very strongly about the importance of encouraging innovation to encourage economic development in rural communities, and to ensure that regulation was not stronger than it needed to be to assure safety.

The approach we see from the USDA is that products developed using CRISPR that could also be developed using traditional breeding methods will not be subject to regulation. There are a few exceptions around plant pest risk, but that's the general approach they're taking.

What that means for companies operating in the U.S. is that they have a clear direction, so they can move forward to commercializing their products with greater certainty.

**Mr. Lloyd Longfield:** Therefore, in Canada...?

**Ms. Krista Thomas:** Therefore, in Canada, if you are developing a product that you know will not be regulated in the U.S., you may have uncertainty. You may not know if it's regulated or not. Our Canadian regulatory approach has many strengths, and flexibility is one of those, but too much flexibility can cause uncertainty.

Our regulators in Canada go to great efforts to help companies and will invite companies to come in and talk to them, but it can often be a lengthier process. If the decision is to regulate in Canada as a novel product, a novel food, that means that product could take a year or two longer to come to market and the company would face much higher costs.

**Mr. Lloyd Longfield:** Great, thank you. So, stability is one of the key things we have to bring forward in this study.

Mr. Petelle, when we're talking about new varieties of grains, for instance, you mentioned fibre. There are also different proteins depending on the type of wheat and what the end market could be for pizza dough, versus bread dough, versus other products for use of wheat. When we're developing export markets, how important is it for us to be able to create some types of value-added or market-specific products to enter into new markets?

**Mr. Pierre Petelle:** Yes, that's a good question, because I think, traditionally, with these large acreage crops, the companies invested in broad appeal, whereas these new technologies, because of the speed at which you can make the changes you need, do open up potentially many more niche markets in satisfying consumer demands right down to specific profiles and characteristics they are looking for, without having to have multi-million dollars' worth of studies to get there. If Canada is positioned as one of those nations where we know that the system is predictable and fair, and it's fast to get those approved, Canada can be that go-to market where those niche products are born and grown.

**Mr. Lloyd Longfield:** One of our strategic advantages is our research capabilities in order to develop new products and new varieties, but we also have to back that up with speed to market.

**Mr. Pierre Petelle:** Absolutely. As I was saying earlier, for our members, predictability and timeliness are the two most critical factors for innovation.

**Mr. Lloyd Longfield:** Have either one of you looked at where our key opportunities are? Maybe building on Mr. Petelle's question, where do we see the biggest opportunity for Canada to develop export by product or by region? Do changes in the American trade focus give us an opportunity? Taking wheat off certain parts of the market, globally...I'm thinking of Indonesia or Central Asia.... Maybe there are opportunities for us because of climate change. What are the opportunities we should include in our study?

**Mr. Pierre Petelle:** I can start. For us, as I mentioned in my remarks, there are key markets that are absolutely critical, China being one of them. We need government to continue to try to get those markets secured for Canada, and give us that competitive advantage over larger competitors, like the U.S. That's an absolutely essential step.

I think, before that, though, yes, we compete with the U.S., we compete with Australia, but we also can work together a lot on regulatory approaches. We've done that on pesticides over the years, and made that process much more predictable and streamlined, and I think there's a lot of room for that on the plant biotech side, where that co-operation is still fairly new. You can have a system where competitive markets are still working together so that the regulatory approaches are consistent and predictable, and then focus on niche markets for Canada, or position Canada to be ahead of some of its competitors.

● (1555)

**The Chair:** Thank you, Mr. Petelle.

**Mr. Lloyd Longfield:** Thank you. That's why you come back. Those are great answers.

**The Chair:** Now we have Mr. MacGregor for six minutes.

**Mr. Alistair MacGregor (Cowichan—Malahat—Langford, NDP):** Thank you to the witnesses for appearing.

Ms. Thomas, you said something in your comments about the need to address the speed to market, and of course, the people you represent are very well aware of what's been happening with our transportation sector, particularly the railways. I know this study is on technology and innovation and how we reach that goal in 2025, but if we don't have a transportation system that can keep up with our exports, we're not going anywhere. Given the feedback that you've received from your members, is there anywhere we can apply better practices in technology and innovation to our transportation sector, in order to help us move our product to market? I understand from previous testimony on other studies, our reputation has taken a hit as sometimes being unreliable in meeting the demands of our customers abroad.

Do you have any comments on that?

**Ms. Krista Thomas:** I'm not an expert in this topic, but absolutely, the strengths of Canada's grain abroad relate to our quality and our predictability of delivery. Any efforts that can be made to help ensure growers can get their grain to market and that we're meeting the needs of our customers are critical. We know markets can change very quickly, and it's important to have a nimble system that can respond to emerging market demands. The comments I've made around seed innovation need to be underscored and supported by having a functional transportation system.

Our members are looking forward to seeing some movement on that, hopefully in short order.

**Mr. Alistair MacGregor:** Maybe I'll get both of you to comment. I just want to dig deeper into gene editing versus GMO.

You mentioned that, of course, a novel food requires a lot more time for regulatory approval. Am I right in saying that, by using the CRISPR technology, as you mentioned, by changing one word or a letter within a book, the end product is not really recognized as a novel food and is therefore a bit faster?

**Ms. Krista Thomas:** I'll have to make a distinction between the global regulatory environment and Canada.

For many countries around the world, we're still early days, and there is still uncertainty, but, to the extent that there is a trend, companies are making a distinction between products that contain foreign DNA and those that don't. When gene editing is used just to change an existing gene within a plant, it seems more likely that these will be treated like conventional products.

In Canada we have a product-based system, so our regulators are not too concerned with the methodology used but rather the trait in the final product and whether that's new and different enough to warrant a pre-market safety assessment.

**Mr. Alistair MacGregor:** Mr. Petelle, do you have any comments on that question?

**Mr. Pierre Petelle:** Yes, I think that's a critical distinction, because on the plant biotech side, that has served us well. It wasn't the fact that it was a GMO that it needed to be regulated, it was the fact that you created a herbicide-tolerant crop. That was the novelty of what was being created, and that's why we needed to regulate it, so it has served us well in the whole GMO debate and discussion.

Now that we get into this more refined approach, it raises some questions in terms that you could have even that one-letter change creating a very novel crop, but does it still need to have the same A to Z regulatory review with the same data requirements?

That's the nuance, and that's the discussion we're having with officials at CFIA, that we think there are different tiers of approaches to take with these gene-edited products, everything from a full assessment, just like a biotech crop with foreign DNA, right down to either no regulation at all to different layers in between. I think even that would be a great improvement, because then we would know what those tiers are, and again, it would provide that predictability, and we would know approximately the time required for each of those levels.

Those are the more detailed discussions that we are having with officials and that we would like support on.

● (1600)

**Mr. Alistair MacGregor:** When you look at the global market and where those private investment dollars are flowing, is there a great deal of excitement out there about gene editing technology? Would you say that is a higher priority for investment dollars now rather than what's going on in the GMO world? When we make a recommendation, where should we recommend the federal government put its attention?

**Mr. Pierre Petelle:** I'm going to answer that a little bit both ways.

For us, biotechnology is still one that is going to be used for the foreseeable future. It's not as if gene editing is coming in and replacing that completely, so we still need that predictability and fair treatment of the biotech crops.

We think we need a slightly more nimble system that can address some of these new technologies like gene editing, and I think that can be done within the current structure. That doesn't require even regulatory change, or certainly not legislative change, to make those changes that we're asking for. We think the system needs to be able to handle both of those.

In terms of where the companies are investing, it probably varies. You'll be able to ask one of them shortly, the biggest one. As Krista mentioned, it's also the small, private breeders, too, who are able to use these technologies as a much less expensive process and also get in the game, so they need that predictability, and they need to bring those innovations.

**The Chair:** Thank you.

[*Translation*]

Mr. Breton, I believe you will share your time with Mr. Saini.

**Mr. Pierre Breton (Shefford, Lib.):** Yes, Mr. Chair.

I thank the witnesses for joining us today.

I find some of the information on your website interesting. I would like to share one piece of information in particular with my parliamentary colleagues.

Mr. Petelle, while many sectors are contributing to the increase in greenhouse gas emissions in Canada, your industry is using plant science innovations to reduce those emissions by nearly 30 million tonnes per year. Well done! That's really great. In addition, your industry contributes to the creation of nearly 131,000 jobs in Canada. Congratulations. Those statistics are very noteworthy.

I would like to briefly talk to you about research and development. In Canada, resources are becoming increasingly limited. The number of emerging countries is increasing, and many countries want to take advantage of the situation.

We talked about innovation earlier. What do you think about public investments in research and development to help your industry? Are they sufficient? Would you like to see more in terms of investments? Could that approach ensure better productivity and competitiveness of your industry?

Mr. Petelle, you can start, and Ms. Thomas could also comment if there is time.

I will then yield the floor to my colleague Mr. Saini.

**Mr. Pierre Petelle:** Thank you for your question.

[*English*]

I think from our perspective on public versus private research, this is always an area that raises questions, public research dollars on what we call "base agricultural research", the commercial benefit that is difficult to quantify. We see a tremendous role for government and academia there.

On taking those basic things to the commercial step, we think there are a lot of places where that partnership can exist between government and industry. We've seen examples of that in the past, and certainly our members are open to different models of R and D in Canada.

I think from our perspective, our members are poised; they're undergoing tremendous change right now in our industry. Mergers and acquisitions are going on almost monthly it seems. On the commitment to R and D, the percentage of total sales our industry puts back into R and D is among the highest of any other sector; close to 11% of total sales go back into R and D. That's almost in lockstep with the pharmaceutical industry. Certainly the members are poised to invest, and continue to do that R and D. As I said, they need the environment in which to do so. I think of some of the recent announcements, such as the supercluster for example. While we're not directly involved, some of our members are, and are very welcoming to that protein supercluster announced in Saskatchewan.

● (1605)

[*Translation*]

**Mr. Pierre Breton:** Thank you very much.

[*English*]

**Mr. Raj Saini (Kitchener Centre, Lib.):** I just have one question. I'm going to preface some of my remarks from the Barton report, which I know, Mr. Petelle, you wrote about. I want to get a better understanding because I'm not a full member of this committee; I'm just substituting today.

Right now we're the fifth largest agricultural exporter in the world, and we're the 11th largest processed food agricultural exporter in the world. We used to be third, and Brazil is now third. We're 11th, behind Holland. Can you explain to me why that is, when you realize the full potential of this industry, especially since 2008-09? You had sectoral stagnation in many different parts of the economy, but this is one part of the economy, going forward worldwide, not even insofar as Canada is concerned. From the reports I've read, in the next 40 years we will be producing more food than we did in the last 10,000 years. With that potential.... You referenced China. China only has one free trade deal; it's with Australia. In terms of the other countries, why are we slipping as opposed to advancing?

**Mr. Pierre Petelle:** That's a million-dollar question. It's a lot of what we've talked about here—the regulatory environment, the ease of getting some of these innovations to market—but it's broader than that, and I'm not going to pretend that this will solve all the issues. There is taxation and how you treat the corporations. There are environmental regulations. There is transportation, the rail. There are a lot of factors that affect our ability to get there. I think that's why some of the wording in the Barton report said that we need to fix some of the low-hanging fruit and work on the tougher ones as we move along.

From our perspective—and I'll focus on getting Canada from fifth to second on exports—we know that we can produce more food sustainably on the same land. I've brought the statistics for almost every crop in Canada. We have easily doubled or tripled yields in many of the crops, using the exact same input on that land. Our industry is able to innovate and get us there. We just need to make sure that an environment is established that will help us do that.

With all of the changes that are happening right now, and some of our competitors that are making bold statements about where they want to be in this hierarchy, we need to also have those bold statements from Canada. We need the accompanying encouragement at the regulatory level, for example, to be part of that as opposed to being on the sidelines, just regulating on health and environment and letting the rest of the elected officials and certain departments focus on increasing our position from fifth to second.

**The Chair:** Thank you.

Mr. Peschisolido.

**Mr. Joe Peschisolido (Steveston—Richmond East, Lib.):** Madam Thomas and Mr. Petelle, thank you for being here. It was very helpful for me to have a better understanding of the issue.

Canada's population is such that we produce a whole lot more than we consume. Mr. Longfield and Mr. Saini were discussing, both in a positive way, how government can be helpful in expanding innovation and research to increase exports.

I'll ask the question a little bit differently. Since we need to export, are there any impediments—other countries, or just issues—that the government can be helpful to you in eliminating?

**Ms. Krista Thomas:** As I mentioned in my opening remarks, it's very important for us to be able to work closely with the Government of Canada to resolve non-tariff trade barriers. I mentioned two objectives for the Canada Grains Council around seed innovation. One is the domestic environment, and the other is the international trading environment. Sometimes these goals appear to be in conflict, but they support one another. Without a global trading environment, without aligned regulations and a supportive environment, we have a trickle-down effect, which is impacting innovators in Canada.

We are very appreciative of the relationship we have with government staff, who support us in advocating for clear and predictable regulatory requirements abroad, and working in international forums to align regulations. We feel it's very important for them to continue to be resourced to do that work.

● (1610)

**Mr. Pierre Petelle:** Just to build on that, we sit at a lot of international tables, the Codex Alimentarius Commission being one of them. They are establishing maximum residue levels. We need to make sure that those resources exist; that the expertise exists within Canada; and that as a management regulatory agency, for example, they have the mandate and the resources to participate at those international tables. It's absolutely critical.

There is also another element in how government can help. We talked about whether it's GMO or gene-edited, and there is a whole public perception issue out there. There are detractors, whether it's GMO or gene-edited, or whatever, who have lots to say about this topic. Frankly, we need the support of the regulators, the government, to defend the decisions they make, whether it's on a biotech crop, a gene-edited crop, or a crop that's just been traditionally bred. We need governments to stand behind their decisions, because this impacts innovation and the attractiveness of Canada to companies deciding where to invest.

**Mr. Joe Peschisolido:** This is actually a very good segue, Mr. Petelle. I have a document here, an enclosure on rethinking the delivery of regulatory programs. Can you elaborate a little bit on how this approach can do two things: change the perception in the public's eye and help to improve efficiency in getting products to market?

**Ms. Krista Thomas:** Those proposals you have there would again help to clarify the existing regulatory approach in Canada and move us away from a case-by-case approach where, if you're a plant breeder, you're not sure exactly whether you will be regulated in Canada, whether you will be subject to a pre-market safety assessment, or what the requirements will be. If those outcomes were achieved, that certainty would be available to you, and that would help to drive innovation.

We're also hoping that the government will be more vocal in speaking about the importance of innovation in agriculture because it is critical. It is a very competitive market, and our R and D strengths are something that will differentiate us going forward.

**Mr. Pierre Petelle:** There are groups that would like to see agriculture move backwards in terms of technology. They're fine with every other sector, seemingly, moving ahead with technological advancements, but for some reason agriculture and food production is something that's out of *Old MacDonald*.

We, of course, take that battle on, and we convey information as best we can, but at some point we need regulators and government to also help with that, and to convey that the food farmers are producing is safe and that the technologies and approaches we take are protective of human health and the environment.

**Mr. Joe Peschisolido:** Mr. Chair, I can't recall if it was Mr. Petelle or Ms. Thomas who talked about the improvements to human health and the environment that research and innovation can impact.

Can you elaborate a little bit on both of those issues?

**Mr. Pierre Petelle:** I can certainly touch on some of them.

Drought-tolerant crops are already being produced, so in areas where water scarcity is an issue, it has a huge environmental impact. The biotech crops we do have—the herbicide-tolerant—have allowed for no-till farming, or conservation tillage, to Mr. Breton's point about greenhouse gas conservation and the fact that we're not driving over the land as many times as we used to in order to control weeds. There are a lot of factors that can be developed right in the genetics of the plant that have tremendous benefits for the environment or health, such as the oils that were mentioned.

**Ms. Krista Thomas:** It's a speculative example, but researchers talk about the potential of gene editing to remove allergens from crop species or to create plants that—again, this is a very speculative example—are better at the uptake of carbon. There are opportunities there to better respond to climate change.

**The Chair:** Thank you.

Now it's Mr. Barlow for six minutes.

**Mr. John Barlow (Foothills, CPC):** Thank you to the witnesses again for your information.

It was certainly interesting that in many of your answers a couple of the things that came up over and over again were predictability and timeliness.

I think, Mr. Petelle, you said that those are two of the key issues we're trying to address here. Certainly, those are a couple of the things that many of the witnesses we've had here at this committee table for various studies—whether on climate change or water and soil conservation—have brought up time and again. We met with the University of Saskatchewan crop development centre. It's the same thing. They are developing new seed varieties and crop varieties. They can't get them to market because of the process.

I know this may be a hard question to answer, but I think the job of all of us here is to come up with a list of recommendations we can provide to the government to ensure that our stakeholders can be successful and can access these export markets. As you continue to talk about predictability, Mr. Petelle and Ms. Thomas, can you give me an idea of what predictability would look like? What would be your dream scenario? As part of this study, when we put together a list of recommendations, what can we do to address that question of timeliness and predictability? What would you like to see there?

● (1615)

**Mr. Pierre Petelle:** We have appeared before this committee before on the question of the re-evaluations with PMRA, and this committee wrote a very helpful letter to the then minister of health, highlighting some of the predictability concerns we had with the process of re-evaluation of PMRA. That language was very helpful. It hasn't changed the situation as of yet, but we're hopeful we're on the right path for that. There are some very specific process issues, for lack of a better term, with the regulators that we could use some support on.

On the plant breeding innovations, I talked earlier about a tiered approach to assessment. We've made very concrete, very specific, and, we feel, well-thought-out proposals. We need a receptive ear. That would be a tremendous help to pave the way for the regulators to consider some of these ideas.

**Ms. Krista Thomas:** Just to add very briefly to that, we're looking for a specific commitment to actually undertake a meaningful look at our regulatory programs for the pre-market assessment of novel foods, plants with novel traits, and novel feeds, with a commitment to act on the findings of that exercise.

**Mr. John Barlow:** If I could just ask one last question, I'm going to give the rest of my time to Mr. Dreeshen, so could you answer quickly?

The other thing we heard many times, including from Mr. Kruszel from the Soil Conservation Council of Canada, is that there's a growing gap between having innovation and new technology and getting it to the producer. There's a big gap. They do these things, and then it sits on the shelf and never gets from one place to the next.

For example, I know we have some canola breeds that we've approved here in Canada, but we're not going to see them approved in China until 2019 or 2020.

What can the government do to try to address some of that issue, the gap, or that void as well?

**Mr. Pierre Petelle:** You'll probably get some specific numbers around what those delays in Chinese approval have meant for Canadian agriculture from some of the other witnesses. It's in the hundreds of millions of dollars at stake here.

Certainly, China is not a simple market to solve, just like that, so I'm not going to pretend that there's a simple answer there, but certainly there's continued engagement and continued dialogue with their counterparts over there. I think Minister MacAulay is headed to China again later this month.

We feel that these issues can and should be top of mind for those meetings, and we think it's going to take an ongoing dialogue and trust building up. I think opening the conversation toward an eventual free trade agreement might unblock some of those specific issues that we've had with China.

**Ms. Krista Thomas:** With respect to seed innovation and gene editing, we'd like to see Canada be one of the leaders of the global discussion, advocating for aligned regulatory requirements as this new technology evolves.

We're at a stage where we're at risk of each country putting in place a slightly different system, which would create an incredibly unpredictable environment for trade.

Partly why I've spoken so much about the domestic framework is that it's challenging for Canada to advocate for international clarity and predictability when we don't have it here ourselves.

● (1620)

**Mr. Earl Dreeshen (Red Deer—Mountain View, CPC):** Thank you very much.

Just in the short time that I have, you had mentioned groups that plan on moving agriculture backward. It's very real. We've seen it with the neonicotinoid issue and with GMOs. We've seen the fight over the way the Europeans deal with their GMO issues, and the way that's processed.

We've also seen it in our oil and gas industry. That's what happens when you have activists who get ahead of industry.

Could you just zero in on a few of these and how, perhaps, government can stand up to these groups that are out there trying to demonize our natural resource industries?

**Mr. Pierre Petelle:** I think, all throughout some of the controversial items you mentioned there, we have a role to play, obviously, as the developers of those technologies, to explain the science and defend them. We take that role very seriously, but when we're pointing to a regulatory system that is robust and science-based and renowned around the world, we need that mandate for those regulators to have a role to play there.

**The Chair:** Thank you.

[*Translation*]

Mr. Poissant, you have six minutes.

**Mr. Jean-Claude Poissant:** Good afternoon, Mr. Petelle and Ms. Thomas. Thank you for your presentations.

Mr. Petelle, you told us at the outset that 50% more food should be produced without technology, but that feeding a family could still cost up to $4,400. What did you base your comparison on to get those figures? Did you compare with organic agriculture?

**Mr. Pierre Petelle:** We produced a report we published two years ago where we made a comparison with organic agriculture in terms of difference in price and productivity.

[*English*]

We can provide the full study if you're interested.

[*Translation*]

**Mr. Jean-Claude Poissant:** Okay.

Consumers are often very critical of GMOs, changes, fertilizers and herbicides. We know that you have sites to explain all that. However, do you have any other ways you use to earn public trust?

I live in Quebec and I know that open houses are held to explain to consumers how food is produced. However, we are still seeing a reluctance among those consumers.

How are you maintaining trust with the public?

[*English*]

**Mr. Pierre Petelle:** That's a very good question.

We have a campaign to educate and inform the public about the safety of the technologies that our members produce. We've been working closely with different audiences, the audiences that we consider more influencers rather than consumers directly. Dietitians, agriculture in the classroom, these types of forums allow us to answer questions, and provide information to people who are then asked lots of questions about food and food safety. That's been very useful.

That audience has questions about the technology. They don't necessarily have an angst or a fear coming into it, they just don't know. Once they've asked the questions, we provide information, supplemented by good information and defence from the regulators. It makes for a very compelling case.

In all of our polling that we've done, 5% to 10% of the very vocal detractor community will never change their position, and they probably often write letters to many of you about their views on agriculture. There is also a consistent 30% to 40% in all of our polling who don't have a strong view either way on pesticides, plant breeding, or plant biotechnology. That 30% to 40% of people are the ones who just don't have the information. They're very open to the information. When provided with a few key pieces of information, they quickly move to the "somewhat support" side of the equation.

We have a role to play. We take it seriously, but we feel that government, with its regulators, could also help with that 30% to 40% to inform them. It's not about swaying positions; it's about providing the facts, and letting them make their own decisions.

[*Translation*]

**Mr. Jean-Claude Poissant:** We conducted a study to establish a food policy. Something that came up often in our study is food waste, which is estimated at 30%.

Ms. Thomas, could you tell me a bit more about that? If that waste was reduced by only 20%, what could that represent in terms of production?

● (1625)

[*English*]

**Mr. Pierre Petelle:** Food waste fits very nicely into this discussion about the innovations that the plant science industry produces, because oftentimes that food waste is due to fungal growth. Whether your tomatoes turn mushy and black, or the wheat that's grown has too much fungus in it for human consumption, there's a lot of waste associated with the presence of pests and pathogens. Having the tools available to be able to control those pests and pathogens at the right time is absolutely critical for agriculture. I can't stress that enough.

Even on the plant breeding side, there are varieties that are much more resistant to certain strains of fungal attack. With gene editing techniques, these things can happen much more quickly, so we can end up with many crops that have a much better profile to resist some of these pathogens that result in a lot of the food waste we see today.

[*Translation*]

**Mr. Jean-Claude Poissant:** The soybean aphid is more or less controlled by the Asian ladybug beetle. Are you monitoring the situation to determine whether the beetle is really effective or whether it is leading to another problem, so that two insects will have to be controlled?

[*English*]

**Mr. Pierre Petelle:** This is a very good example of where seed treatments have been extremely useful. Mr. Dreeshen talked about neonicotinoids. This is the issue around pollinators, and has been very controversial. Many people are coming out against neonics. In fact, Europe just announced a full ban on neonics.

The reality is that example you gave. You treat that seed, then it's put in the ground. You're not spraying over top of the crop. Your natural predators like ladybugs and many others are protected, and are able to get up to levels that help control those aphids. Not only is the seed treatment protecting that young plant from aphids and other insect pests, but as the plant grows bigger, the natural predators are able to thrive in that crop, because they haven't been sprayed over with an insecticide.

**The Chair:** Thank you. We're basically out of time.

I want to thank both of you. It was a very informative discussion and it will certainly contribute to our report.

I'd ask that everybody take a couple of minutes while we change witnesses, and then we'll be back.

● (1625)

(Pause)

● (1630)

**The Chair:** Welcome to our second hour of discussion of technology in Canada's agricultural and agrifood sector.

In the second hour we have, from Bayer CropScience Inc., Mr. Paul Thiel, vice-president of product development and regulatory science; and from BioFoodTech, Mr. Jim Smith, executive director. Welcome.

We will give you up to seven minutes to make an opening statement if you wish.

Dr. Smith.

**Dr. Jim Smith (Executive Director, BioFoodTech):** First of all, I'll apologize for my lack of French.

I'm the executive director of BioFoodTech in Prince Edward Island. I'll talk about that first of all, and then I'll talk about FOODTECH Canada, which is a network of food technology centres.

First of all, BioFoodTech is an organization that provides technical support for the food and bioscience industry in Prince Edward Island regionally and nationally, and it does some international work as well. We're owned by the Province of Prince Edward Island, but we're funded only about 40% by the province, so we do cost recovery work on top of that to balance our budget. The type of work that we do, similar to other food technology centres around the country, is technical support for the food industry. We are scientists, technologists, and engineers working on behalf of industry and with industry on industry-funded projects.

This is in common with many other organizations around the country. I'll take a national perspective and really talk about all of the centres collectively, rather than just BioFoodTech, to help you understand what we have in Canada to support the industry for value-added food product development and technical support.

As you can see, there is a whole range of centres here. Most provinces have at least one centre, some have two centres. The only exception, New Brunswick, does not have a food centre. It has RPC, which is more engineering. British Columbia does not have a food technology centre, but it is in fact working on a new food technology centre at the moment—actually probably more than one.

We're very much similar to each other, but also very different. Many of them are owned by the provincial government, some are private, and some are institutes within universities.

The combined resources, then, of these centres—and this accounts for nine out of the 12 at the moment, as we're waiting for other information to come in—are 309 highly qualified scientists, technologists, and engineers; $220 million in building infrastructure; lots of processing and analytical equipment; and quite a large area of pilot plant. Each year, the centres collectively work with 870 companies, deliver $24 million in industry contracts, introduce 370 new products to market, and hold manufacturing technology workshops.

In terms of the types of services we provide, we're scientists, technologists, and engineers, so what we do is we work as the technical department for many food companies. Most food companies do not have technical people on staff. They don't have scientists or technologists on staff. This certainly accounts for most of the small and medium companies. The larger companies, of course, would, but the smaller ones don't. So we work as their technical department and help them to do product development, and solve problems and find equipment for them, that type of thing.

How do the food technology centres fit into the innovation ecosystem? We are the primary innovators. There was a study done a couple of years ago by KPMG on behalf of the Food Processing Industry Roundtable and Agriculture and Agri-Food Canada. What they found in their study was this is where the primary innovation is done: it's industry working with the food technology centres, because working together we can provide results and help to the industry in the short term. Our turnaround is two months to two years typically.

The scientific people we have working are "industrial-strength Ph. D.s", basically Ph.D.s who are not interested in publishing, they're interested in working with the industry and helping to provide solutions to them.

● (1635)

The universities are a very important part of the innovation ecosystem, but their time frame is much longer. You're typically talking about five to 10 years before the results are commercialized. There's more of a priority towards publication, which the food technology centres typically do not do because their work is confidential.

What impedes innovation in Canada? Well, we basically don't have a strong culture of innovation within the value-added food processing industry, and 90% of the companies do not have a relationship with the food technology centres to help them to develop new products. One of the issues caused by that is that there's a huge trade deficit in value-added food products. According to CAPI, it's $8 billion. There are different measures of that, but it's a big number, and it's growing. Part of that is because of the lack of development and the lack of investment in innovation.

We are working every day to try to recruit new companies to come and work with us to develop their technologies, to do workshops and new product development. Our tag line at BioFoodTech is "concept to pilot to market". What we like is to have companies come to us with ideas before they've developed them very far so that we can help them through the process of figuring out whether their ideas have any potential, and help them through the whole process.

I thank you. That's my opening statement.

● (1640)

**The Chair:** Thank you. That's right on time. That's great.

Mr. Thiel, you have seven minutes.

**Mr. Paul Thiel (Vice-President, Product Development & Regulatory Science, Bayer CropScience Inc.):** Honourable members of the standing committee, it's a pleasure to join you today. Thank you for the opportunity to speak about advancements in our agricultural industry to support Canada's ambitious target of $75 billion in agrifood exports by 2025.

I represent Bayer CropScience. Our company proudly offers an outstanding range of products, including high-value seeds, innovative crop protection solutions based on chemical and biological modes of action, as well as an extensive backup to service modern agriculture.

Capturing our export potential is underpinned by a stable and predictable domestic regulatory system that enables farmers access to these innovative tools and technologies to keep them competitive. Our regulatory system is renowned around the world for its rigorous evaluation process of crop protection products. This global reputation can be weakened when proposed re-evaluation decisions are published or made in Canada with ultra-conservative end points and incomplete data. These decisions can also result in the loss of tools available to our growers, and this will inevitably reduce the productivity, sustainability, and competitiveness of Canadian agriculture. This will make it difficult to reach our export targets.

The Pest Management Regulatory Agency's re-evaluation process does not afford an opportunity for registrants or other affected stakeholders to address potential risk concerns prior to the publishing of these proposed re-evaluation decisions. This is unacceptable, as it sends an unclear signal to foreign jurisdictions and can erode public trust both at home and abroad. Furthermore, to increase public trust in our regulatory processes, we would ask the government to allocate resources to improve communication efforts to the general public on how these processes are used in Canada and how these decisions are made by our regulators.

Another key consideration is ensuring that our export markets accept the technologies and innovations that have been approved by Canadian regulators and adopted by our growers. When access to export markets is hindered due to delays in regulatory approvals between jurisdictions, it can deter investment in innovation, restrict the adoption of new technologies, and impede exports. Harmonized international approvals for both biotech traits and other technologies, including the promulgation of maximum residue limits, are necessary to support these technologies. Over the past 20 years there have been too many incidents of non-tariff measures facing Canadian exports, and we believe that Canada can play a larger role in supporting the development of emerging regulatory frameworks in key export markets.

In order to help facilitate this dialogue, we also need to identify areas where our own regulatory system needs improvement, and take bold steps to modernize these processes that we already have in place.

We've heard today that modern plant breeding innovations will allow researchers to precisely add, delete, or replace specific characteristics to better meet the needs of farmers and consumers while protecting the environment. Bayer supports a modern science-based framework and believes the focus of regulation for products of modern plant breeding should be based on the scientific risk assessments within existing legislation. This type of framework helps protect both human health and the environment while enabling fair and predictable regulation of plants derived using these modern innovations. We encourage the government to continue to engage with key export markets to help drive science-based decision-making through regulatory alignment and transparency.

Bayer has a long-standing record of investing in research and development in Canada, made possible by a strong environment for intellectual property protection and by a farming environment that is representative of other parts of the world. We enjoy access to a skilled workforce and to collaboration with leading public and private researchers. Canadian farmers have validated these advancements by readily adopting new technologies as they come to market and placing trust in our innovations.

The government can help enhance innovation by further streamlining internal priorities and processes. Collaboration between departments will eliminate potential areas of duplication, while providing more clarity on reporting requirements. There have been cases in which uncertainties have led to unnecessary delays and have impacted research projects. Furthermore, continued dialogue with other countries is needed to ensure that researchers are able to transfer materials between research sites in different jurisdictions. Taking these steps will help bring new solutions to growers faster.

● (1645)

I would like to end my remarks by sharing an example of the positive impact our investments in research and development have had in Canada. Bayer is the largest provider of canola seed to the Canadian market. Our InVigor brand has contributed significantly to the growth of canola in Canada while improving sustainability and enabling growers to adopt minimum- and zero-tillage practices. Furthermore, we have developed varieties with healthier oil profiles and technologies for pod shatter reduction, assisting in harvest.

As a leader in Canadian agriculture, we are committed to being an active partner in advancing science to meet the needs of Canadian farmers and consumers here at home and abroad.

I look forward to answering your questions. Thank you.

**The Chair:** Thank you very much, Mr. Thiel.

We'll go to questions.

Mr. Dreeshen, you have six minutes.

**Mr. Earl Dreeshen:** Thank you to our guests for being here this afternoon.

In the last panel we had, there was a discussion about various groups that actually look at moving agriculture backwards. The analogy I presented was that we simply take a look at what happens when they get ahead of industry—I'm from Alberta, and we saw what happened with the oil sands activists—and industry isn't there to stand up for the real scientific aspects that are taking place.

Again, Mr. Thiel, there was a discussion about neonicotinoids, and you spoke about canola. I mean, that's where the beekeepers take the bees, to where the canola is, so the real reasons, and the discussions and concerns we have, are I think critical discussions that need to take place.

I'm just wondering what we are doing in order to ensure that the proper scientific information gets out to the public. The reason I say that—I mean, I am a farmer, but I also come from a rural area—is that I've had people write me letters about how we should get rid of neonicotinoids, because in Ontario and Europe that's what they're doing. I've realized that people don't understand agriculture anymore. I was a teacher as well, so I also know that you're going to teach those things that you know.

Industry has to be challenged with going in and getting the right messages out there. Otherwise, you're going to see these fancy lessons put up from all these activist groups about how farmers are doing evil things to animals and how all of these things are causing problems around the world. It's all complete nonsense. Where is industry standing up to protect the integrity of our Canadian agriculture and agriculture around the world?

**Mr. Paul Thiel:** Thank you very much for the comments. I think I'm in complete agreement with everything you said.

At Bayer we've recently undertaken two steps to try to address these very concerns. First, I'd like to speak to a global initiative we've undertaken that we refer to as our "transparency" initiative. In this, we have now made available to the global public our environmental safety and human safety studies, which we submit to the authorities and which are generally considered to be protected information under the guise of the regulations within the country. We have opened that up to the public. Anyone can go online into a global database and request copies of these studies. We think it's important to try to get our science out there alongside the other scientific information that is being presented. We have not been putting our science in front of the public. So I think that's one step.

The second step I'd like to discuss is something we've coined "benefits beyond efficacy". If you are a consumer of canola oil, living in an urban setting, you may want to understand more than just the fact that this insecticide controls something called a flea beetle on canola. That's wonderful for a grower, but what does it mean for me? We're trying to look more holistically at the role of our products both on the farm and off the farm, trying to create the story of value, and trying to arrive at a more trustful relationship.

● (1650)

**Mr. Earl Dreeshen:** The other point is that in so many cases this is a non-tariff trade barrier. There are other countries or other groups that are trying to protect their technology; therefore, if they can demonize ours or other technologies, then they're able to get advantages there.

Are there things that our trade negotiators should be doing when they see that happening, and do you work closely with our trade negotiators so that this is being presented in the way it should be?

**Mr. Paul Thiel:** Yes. We have a very good relationship with many of the trade offices around the world. I would highlight our role in Brussels. I would also highlight the input we have had, the opportunity to contribute to trade missions, particularly China.

Certainly the government has been very open to our participation and support.

Coming back to one comment I made in my opening statement, I think the government could do more to get the public to have trust in the regulations that are in place. We are a very good, sound, and science-based regulator with a global reputation. It's one that the citizens of this country should have trust in, but they question it, partly because they don't understand it.

**The Chair:** Thank you.

Now we have Mr. Longfield for six minutes.

**Mr. Lloyd Longfield:** Thank you, both, for being here.

I'd like to start with Mr. Smith.

Guelph has the NSF group, the former Guelph Food Technology Centre. You outlined that as part of an overall network across Canada.

I'm wondering about the connection of that network to financial networks, like the venture networks. Bioenterprise is one that helps these start-up companies. I wonder how that can be used to increase our export potential, and whether you're using Innovation Canada in any way yet—and I know it's a new organization. Could you highlight the flow of the technical development, the financial supports, and the assistance to get to export markets?

**Dr. Jim Smith:** I think it's something that is underutilized

Most of the companies we work with are small to medium-sized companies. Most of them tend to work with their own resources, their family resources, and many are not looking to grow significantly.

One of the things we're doing in Prince Edward Island now is working collaboratively with a few different organizations. There are Food Island Partnership, Canada's Smartest Kitchen, and the National Research Council. All of these organizations have a mandate towards improving the food industry and to grow it.

Food Island Partnership, in particular, is taking a leading role in exactly what you've just mentioned. As I say, from our point, it's more the technical support. We're relying on them to coordinate a much broader support for the industry.

So, that's what's being done in P.E.I.

Regionally, ACOA is certainly very involved with discussions, and Food Island Partnership is very much involved with them. Again, to provide that broader range of support to the industry, one of the things we think is key is to identify those companies that are really interested in growing and have the wherewithal, the resources, or access to the resources, as you mentioned, to grow, because that's where we see the largest growth potential being. If a company has 30, 40, or 50 people, something like that, and they want to double the size of the company, that's where, I think, we could have a lot of potential to grow our food processing industry in Canada.

● (1655)

**Mr. Lloyd Longfield:** I'm halfway through my time. I'd like to go further, but thank you for getting all that forward. Connecting the innovation and agriculture departments together with export is something we're trying to do as a government.

Mr. Thiel, thank you, first of all, for having me up to Ennotville and showing me the experimental farm north of Guelph.

I'm looking at the modern agricultural tools, the digital farming, and the honey bee health being part of what that group is working on. Could you dive a little into the digital farming opportunities, or the honey bee health and how important that is to bear?

**Mr. Paul Thiel:** Quickly on the honey bee health topic, we take honey bee health very seriously. We're the single largest contractor of pollination services in Canada. Without bees, our business would be at jeopardy, so we spend a lot of time trying to understand it and making investment in ensuring honey bee health.

I think digital farming is a big opportunity for us in Canada. Digital farming is going to allow growers to make better decisions about how to farm their land, where to farm, what to do on their land. It's going to create a very positive story of sustainability that goes along with our products. We have the technology in Canada to support the investment made by many people in digital farming. It is a reality today. We've launched a digital farming tool this year that allows growers to make better applications of fungicides to their canola on the fly, reducing costs and improving the sustainability.

**Mr. Lloyd Longfield:** In terms of public trust, as Mr. Dreeshen was saying, if the public knew how important honey bees were to your products, as well as neonics to improve your yields, the two of them can work together. In fact, they have to work together.

**Mr. Paul Thiel:** I agree.

**Mr. Lloyd Longfield:** I wasn't expecting that you would disagree.

The public trust is such a big thing.

I know that in Germany, Bayer must have dealt with this. Are there any lessons from Germany that we can take into North America, or that maybe you are bringing across from Germany through the Bayer network?

**Mr. Paul Thiel:** I'm not sure there are many lessons we're bringing. There are things we have learned to avoid in North America.

I think our transparency is a demonstration of what we're trying to do. We perhaps have tried to hide behind the cloak of scientific data that the government has and everybody should trust us. I think we have to be more open and transparent, which we are trying to do, because notwithstanding the role of science—and we talk about science-based regulation—that's only part of the process. Ensuring we have public trust in what goes on the farmers' land and what winds up on the grocery shelf, I think is of paramount importance.

**Mr. Lloyd Longfield:** Absolutely. Thank you very much.

**The Chair:** Thank you very much.

Now, Mr. MacGregor, for six minutes.

**Mr. Alistair MacGregor:** Thank you, Chair.

Mr. Thiel, I'll start with you, and because I want to get to Mr. Smith, I want to package just two questions into it.

You made mention in your opening statement that you want to see the elimination of duplication in federal departments. Can you provide the committee with a few concrete examples of where that might exist?

With regard to my second question, Bayer is very much a global player. You have offices, and your reach extends, in many different countries. I previously had a phone call with the Canadian Seed Growers' Association. They mentioned that France and Portugal were two countries that were very forward looking in looking for future opportunities in innovation, seed development, and so on.

Can you provide this committee with any examples of countries we could be looking to as examples of technology and innovation, given that Bayer has such a global reach?

**Mr. Paul Thiel:** I'll start with your second question. Of course, I'll certainly advocate for Canada as a country in which we have all kinds of innovation taking place. I lived in France for a number of years and it is extremely progressive on the science side, although it doesn't always find its way into the marketplace. We have to ensure that we draw a distinction between those two scenarios. My colleague on the panel today mentioned applied science and the idea of taking things that we can get into the hands of growers. There's a role for pure research and it's absolutely paramount because it underpins what we do, but at some point we also have to be able to transfer that technology into the hands of the growers in a tool that they're able to use and they're able to benefit from.

The other comment is about duplicity. Duplicity often comes through a lack of coordination between various departments or various ministries across the government. I'm sometimes challenged by the sheer size in navigating my way around Bayer. I don't know what it would be like to try to navigate my way around government, but too often we have instances where the right hand and the left hand don't seem to be communicating. I'll use the neonicotinoid example. Right now we have one branch that seems to be looking at alternatives to neonicotinoids, and at the same time, another branch that is looking to take away the very products that are identified as alternatives. That puts industry in a very difficult position, and more importantly, it puts our customer, the grower, in an extraordinarily difficult position because losing one tool is challenging enough, but losing the alternatives to that tool is even more challenging.

Another one that is just finally coming to an end after nearly eight years is Environment Canada coming to us with regulation around plant pathogens and how we're able to use them in research. The Agriculture Canada researchers who were using these very pathogens themselves were unaware of what was coming. Eight years later, we finally have a resolution in place. A lot of it is ensuring that communication across sectors; a sectoral approach to regulation is critically important.

● (1700)

**Mr. Alistair MacGregor:** Thank you.

Mr. Smith, when you were giving the slide show, I was really interested in the part where you mentioned that, on average, you helped introduce 370 new products to market. I wonder if you could give examples of some of those new products, and examples where value-added technology is working well in Canada and where we could make recommendations as a committee. Where I come from, the Cowichan Valley, we have some local areas on Vancouver Island where local organizations are helping farmers collectively come together to realize value-added potential in their products so that they can really maximize the amount of dollars they earn. I'm very interested in this on a personal level, and also on behalf of my constituents.

**Dr. Jim Smith:** For brevity, probably one of the best examples from Prince Edward Island is Island Abbey Foods. They produce a product called "honibe", which is a solid honey. They came to us a number of years ago and asked if it was possible to make a solid honey. Honey bottles are often made of glass, and when we drop them we can break them and it's a mess. Also, honey picks up moisture like crazy. They were interested in finding out whether they could do this, especially for people who are camping. They came to us and we said, "Okay, let's look into it." We worked together and developed a technique to dehydrate honey, which produced a lozenge, which first of all was intended as a sweetener. More recently they have developed it into a lozenge that can be used for natural products, semi-pharmaceutical type products, and that has been very successful. That particular company has grown to a staff of 60, from people who had no knowledge of the food industry before they got into that. This person was an information technology specialist, but he wondered if it was possible, because he thought there was a market for something such as that because it's natural. It has really taken off, and it's sold and exported around the world as well.

There are lots of examples. We have another client working with us now, incubating at BioFoodTech. They're making Fauxmage, a non-dairy cheese, and there's a huge market for it. It's a vegan-type product, and that is a huge growth area. They can't keep that product on the shelves, because there's so much demand for it.

● (1705)

**The Chair:** Thank you.

Now we have Monsieur Breton for six minutes.

[*Translation*]

**Mr. Pierre Breton:** Mr. Smith, had you finished answering Mr. MacGregor? Do you have anything else to add? Your comments were interesting, and I could let you continue.

[*English*]

**Dr. Jim Smith:** Thank you. Yes, I would like to continue. As well as the fruit-related examples, there's one example I think is very important, because it shows you the unexpected consequences. We've been working for many years on what's called "supercritical fluid extraction", which is the use of high-pressure carbon dioxide to extract different value-added products from oats. This is with an Alberta company called Ceapro, which is well known. We've developed that technology in collaboration with them.

We've been working in this technology. We've had a local company do lots of modifications to the equipment we've had, and because of that they've developed expertise in manufacturing this equipment. Now they're selling it to the cannabis industry for extraction of cannabinoids. This equipment sells for between $1 million to $2 million apiece. It's a very successful new business for this company. It was unexpected, but it's built on developing that technology around the extraction from food.

I think that for the honey product, and of course for the supercritical extraction, intellectual property is very important. Mostly in the food industry, unfortunately it's very difficult to claim intellectual property. It's usually a trade secret because it's very difficult to make a case for many new products unless they're highly technological. The honibe product was.

Another client working with us is doing a process for aging whisky very successfully. This particular process reduces the time to age whisky to develop into a product that tastes like a 10-year-old whisky, and it's done within 40 minutes. This has been taken up by a company from Scotland that is selling products in North America, and they've started a test market this year in the U.S. of 10,000 cases of this product to see how well it does. They've had very good results with it, and they can individualize the product quality. ...too much detail, but it's a very interesting process, and it's probably going to be used around the world to age spirits.

[*Translation*]

**Mr. Pierre Breton:** Thank you, Mr. Smith.

I would like to give Mr. Thiel an opportunity to answer another question related to research and development.

Businesses often tend to invest a great deal in research and development or in innovation during the production phase. How important is that phase? As for innovation, could research and development be done more upstream?

You have about two minutes to answer.

[*English*]

**Mr. Paul Thiel:** It's an interesting idea. I see no reason why we couldn't do that. We certainly recognize that not all the science we're interested in resides within Bayer; we must partner. We do partner with research institutions in Canada, but not to the degree we should, unfortunately. When it comes to North America, the vast majority of the dollars flow to the U.S., and there's absolutely no reason why we are not investing more heavily in Canada. We tend to internalize the development side, and there's absolutely no reason why we could not do more work externally on the development of our innovations for the marketplace.

● (1710)

[*Translation*]

**Mr. Pierre Breton:** Mr. Smith, since you made an interesting presentation on research and development, I would like to know what you think about this.

[*English*]

**Dr. Jim Smith:** Our approach is to be collaborative. We have the FOODTECH Canada organization network across the country, and we have another network that we belong to called Innoventures Canada, which includes the National Research Council, Saskatchewan Research Council, and the other research councils around the country, including CRIQ in Quebec. I think collaboration throughout the whole cycle of innovation is critical.

[*Translation*]

**The Chair:** Thank you.

I now give the floor to Mr. Peschisolido for six minutes.

[*English*]

**Mr. Joe Peschisolido:** Mr. Chair, I'm very tempted to delve into the process of aging whisky, only for health reasons, but I think I'll resist that temptation and move on to other issues.

I'd like to thank both Mr. Smith and Mr. Thiel for appearing here.

As Mr. MacGregor did, I'd like to go a bit parochial.

Mr. Smith, you talked about the national scope of the organization. I'm blessed to represent the folks in Steveston—Richmond East, which is just south of Vancouver, and you mentioned that you're in the process of developing a centre in B. C. but that you haven't gotten there yet. Can you elaborate a little bit on that and on how we can be helpful, if we can, in helping that along?

**Dr. Jim Smith:** This is an initiative happening around the University of British Columbia, and which I believe is centred in the Okanagan. To be honest, I'm not personally involved with it, because they have some consultants helping them to move this forward.

In answer to your question, the main point would be that all of these centres need local, regional, and national support in order to work, because without that, there just isn't enough operational or capital funding to put a centre together. It was attempted a number of years ago in B.C., and it fell apart at that time because they just didn't have the breadth of support that was required. The more conversations that are had with people at different levels, the better.

Because of FOODTECH Canada, we have been able to take enquiries from different people in B.C. and distribute them around the country to where it would be appropriate for them to get the technical support. It's a virtual approach to providing that technical support to them. One of the issues we have is that companies really need local space to incubate their product with technical support. They need a pilot plan and they need people who can help them through the issues they have. Where there are those facilities is where we see the product development happening.

**Mr. Joe Peschisolido:** Mr. Thiel, you talked about the importance of partnership to Bayer. How can the Government of Canada and this committee be helpful to Bayer in developing a partnership with you guys in modernizing our process to be a bit more innovative and productive in our farming system?

**Mr. Paul Thiel:** I'm quite proud of the work that the government has done with us to date on that. We have collaborative research agreements, and we have processes in place that facilitate those agreements so that it's much easier to arrive at an end point, so that's been very good. Ultimately, we want to see the fruits of this innovation actually make it to the marketplace. I would come back to the purpose of this hearing, which is to ask how we put in place regulations that are acceptable to our stakeholders, which is a very broad word, to ensure that these innovations can get to the grower and ultimately to the consumer.

● (1715)

**Mr. Joe Peschisolido:** In the previous section, we talked about Canada being a small market. We have a surplus of products that we want to export. You mentioned the trade mission in China. In Vancouver and Steveston—Richmond East, China is an important market. Can you elaborate on what Bayer is doing for the Chinese market and how we can partner with you in dealing with non-tariff barriers in the Chinese market?

**Mr. Paul Thiel:** We have a very good relationship with the trade secretariat at Agriculture and Agri-Food Canada. We're in routine communication with them. Again, we're focused on that part of our business that we know is destined to China: canola. That's the single biggest opportunity. It's really about ensuring that the technology that we want in place to grow the most sustainable, safe, quality canola crop is available to the customer and acceptable to the Chinese. That's really focused around the acceptance of plant breeding innovation and the acceptance of the crop protection products that are used on the crop.

I'm sure for growers, there are lots of other issues, but I really have to stay within the purview of Bayer in my response.

**Mr. Joe Peschisolido:** Mr. Smith, you talked about the deficit on value added in food production in British Columbia. As you know, the greatest manufacturer is the agribusiness sector. How can government be helpful to you in helping expand the manufacturing part or the processing part of agriculture, in particular in B.C.?

**Dr. Jim Smith:** I think having a centre, having people who are focusing on the industry to help them with their development is key. If what we have done in P.E.I., in particular, and I think other provinces can learn from it is to.... When we have a company with the potential to get into a new product development, catch it at the early stage and get everybody in the room with them from different federal departments and provincial departments and funding sources and so on. This is so that they can be shepherded through this whole process, because it's hard. It's something that they need various perspectives on to help them through.

**The Chair:** Thank you, Mr. Smith and Mr. Peschisolido.

Unfortunately, we have to end it here because we have a bit of business to do with our committee. I certainly want to thank both of you. I would have loved to ask questions, being a producer myself, but maybe I'll limit it to one. The nice accent that you have, is that British, Scottish, or Irish? I think if you had mentioned Scotch instead of whisky, I would have had my answer. If you don't mind....

**Dr. Jim Smith:** I can't say just Scotch because it's for whisky globally. Yes, I'm a Scotch.

**The Chair:** Thank you so much and thank you for your presence here today.

We shall suspend, and then we go back to our business section.

[*Proceedings continue in camera*]

**Published under the authority of the Speaker of the House of Commons**

## SPEAKER'S PERMISSION

**The proceedings of the House of Commons and its Committees are hereby made available to provide greater public access. The parliamentary privilege of the House of Commons to control the publication and broadcast of the proceedings of the House of Commons and its Committees is nonetheless reserved. All copyrights therein are also reserved.**

**Reproduction of the proceedings of the House of Commons and its Committees, in whole or in part and in any medium, is hereby permitted provided that the reproduction is accurate and is not presented as official. This permission does not extend to reproduction, distribution or use for commercial purpose of financial gain. Reproduction or use outside this permission or without authorization may be treated as copyright infringement in accordance with the *Copyright Act*. Authorization may be obtained on written application to the Office of the Speaker of the House of Commons.**

**Reproduction in accordance with this permission does not constitute publication under the authority of the House of Commons. The absolute privilege that applies to the proceedings of the House of Commons does not extend to these permitted reproductions. Where a reproduction includes briefs to a Committee of the House of Commons, authorization for reproduction may be required from the authors in accordance with the *Copyright Act*.**

**Nothing in this permission abrogates or derogates from the privileges, powers, immunities and rights of the House of Commons and its Committees. For greater certainty, this permission does not affect the prohibition against impeaching or questioning the proceedings of the House of Commons in courts or otherwise. The House of Commons retains the right and privilege to find users in contempt of Parliament if a reproduction or use is not in accordance with this permission.**

**Also available on the House of Commons website at the following address: http://www.ourcommons.ca**

**Publié en conformité de l'autorité du Président de la Chambre des communes**

## PERMISSION DU PRÉSIDENT

**Les délibérations de la Chambre des communes et de ses comités sont mises à la disposition du public pour mieux le renseigner. La Chambre conserve néanmoins son privilège parlementaire de contrôler la publication et la diffusion des délibérations et elle possède tous les droits d'auteur sur celles-ci.**

**Il est permis de reproduire les délibérations de la Chambre et de ses comités, en tout ou en partie, sur n'importe quel support, pourvu que la reproduction soit exacte et qu'elle ne soit pas présentée comme version officielle. Il n'est toutefois pas permis de reproduire, de distribuer ou d'utiliser les délibérations à des fins commerciales visant la réalisation d'un profit financier. Toute reproduction ou utilisation non permise ou non formellement autorisée peut être considérée comme une violation du droit d'auteur aux termes de la *Loi sur le droit d'auteur*. Une autorisation formelle peut être obtenue sur présentation d'une demande écrite au Bureau du Président de la Chambre.**

**La reproduction conforme à la présente permission ne constitue pas une publication sous l'autorité de la Chambre. Le privilège absolu qui s'applique aux délibérations de la Chambre ne s'étend pas aux reproductions permises. Lorsqu'une reproduction comprend des mémoires présentés à un comité de la Chambre, il peut être nécessaire d'obtenir de leurs auteurs l'autorisation de les reproduire, conformément à la *Loi sur le droit d'auteur*.**

**La présente permission ne porte pas atteinte aux privilèges, pouvoirs, immunités et droits de la Chambre et de ses comités. Il est entendu que cette permission ne touche pas l'interdiction de contester ou de mettre en cause les délibérations de la Chambre devant les tribunaux ou autrement. La Chambre conserve le droit et le privilège de déclarer l'utilisateur coupable d'outrage au Parlement lorsque la reproduction ou l'utilisation n'est pas conforme à la présente permission.**

**Aussi disponible sur le site Web de la Chambre des communes à l'adresse suivante : http://www.noscommunes.ca**